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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,502	08/21/2006	Paul Nicholls	101.0057	6663

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EXAMINER	
VERBITSKY, GAIL KAPLAN	
ART UNIT	PAPER NUMBER
2855	
MAIL DATE	DELIVERY MODE
07/07/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,502	NICHOLLS ET AL.	
	Examiner	Art Unit	
	Gail Verbitsky	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-16,18 and 20-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-16,18 and 20-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18, 20-23, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Hartog et al. (U.S. 5821861) [hereinafter Hartog].

Hartog discloses in Figs. 1-3 a device/ method in the field of applicant's endeavor comprising a

a reactor vessel (inherently having a process) comprising:
a body (vessel wall and vessel inside)
a conduit 24 (metal), 26 disposed near (outside or embedded: inside the wall, col. 2, line 6) the body;
a distributed temperature system for monitoring temperature in the
body and comprising an optical fiber 20 positioned in the conduit 24, 26; and
the conduit and the optical fiber extending such that they provide a temperature profile of temperatures in at least a portion of the body.
A processor 28 obtains temperature distributed data from the sensor, monitors it (body parameters) and makes/ performing a process (automatic) control by controlling heating element (controlling temperature within an acceptable range).
Hartog states that installation of the optical fiber could be performed by directing jets of fluid (fluid drag) (col. 1, lines 59-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-7, 10 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog et al. (U.S. 5821861) [hereinafter Hartog] in view of DeBruin (U.S. 20080312406).

Hartog discloses in Figs. 1-3 a device/ method in the field of applicant's endeavor comprising a

a reactor vessel (inherently having a process) comprising:
a body (vessel wall and vessel inside)
a conduit 24 (metal), 26 disposed near (outside or embedded: inside the wall, col. 2, line 6) the body;
a distributed temperature system for monitoring temperature in the
body and comprising an optical fiber 20 positioned in the conduit 24, 26; and
the conduit and the optical fiber extending such that they provide a temperature profile of temperatures in at least a portion of the body.
A processor 28 obtains temperature distributed data from the sensor, monitors it (body parameters) and makes/ performing a process (automatic) control by controlling heating element (controlling temperature within an acceptable range).
Hartog states that installation of the optical fiber could be performed by directing jets of fluid (fluid drag) (col. 1, lines 59-67).

Hartog does not teach that the reactor vessel has a tray, weir and downcomer, as stated in claim 1, and the remaining limitations of claims 1-7, 10.

DeBruin states that some reactors, especially ester exchange reactors have such internals as weirs, trays, downcomers, and also need temperature control, and thus knowledge of temperature inside reactor.
Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Hartog so as to obtain temperature measuring of the vessel having weirs, trays, downcomers, because these vessels also need to have their temperature assesses and controlled.
Hartog does not teach that the conduit made of stainless steel, as stated in claim 4.

For claim 4: the use of the particular material, i.e., stainless steel, as stated in claim 4, for the conduit, absent any criticality, is only considered to be the "optimum" material

that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the conduit disclosed by Hartog since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

Claims 24, 26-31 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog in view in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Mercer (U.S. 2499105).

Hartog discloses the device as stated above.

Hartog does not explicitly teach the limitations of claims 24, 26-31.

Anderson teaches that a fiberoptic sensor for sensing both pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog in the distillation vessel, and use to obtain pressure data also, because, according to Anderson it is important to obtain temperature and pressure of the distillation vessel during the distillation process.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Mercer, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameters, and

having a plurality of valves. With respect to the particular positioning of the inlet/ outlet: it was held that there would be no invention in shifting the inlet/ outlet disclosed by Mercer to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog in the distillation vessel, as taught by Anderson and Mercer, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Mercer.

Claims 9, 12-15 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog and DeBruin, as applied to claims 1-7, 10 above, and further in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Mercer (U.S. 2499105).

Hartog and DeBruin disclose the device as stated above.

They do not explicitly teach the limitations of claims 9, 12-15.

Anderson teaches that a fiberoptic sensor for sensing both pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog and DeBruin in the distillation vessel, and use to obtain pressure data also, because, according to Anderson it is important to obtain temperature and pressure of the distillation vessel during the distillation process. With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the

particular features of the distillation vessel, Mercer, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameters, and having a plurality of valves. With respect to the particular positioning of the inlet/ outlet: it was held that there would be no invention in shifting the inlet/ outlet disclosed by Mercer to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog and DeBruin in the distillation vessel, as taught by Anderson and Mercer, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Mercer.

Claims 24, 26-31 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog in view of Chuang et al. (U.S. 7211702) [hereinafter Chuang] and Camson.

Hartog discloses the device as stated above.

Hartog does not explicitly teach the limitations of claims 24, 26-31.

Chuang discloses a device wherein a reactor vessel is a part of a distillation column/ system (having stages) and the temperature and pressure of the vessel is controlled by valves and automatic controllers. Chuang controls the process parameters to keep them within acceptable range. The device is concerned with separating of the components.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device of Hartog in a distillation system of Chuang because the parameters of the system of Chuang are also needed to be measured and controlled, as already suggested by Chuang.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by the Prior Art to a different position depending what process is being performed in the distillation system, since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Claims 11-16 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog and DeBruin, as applied to claims 1-7, 10 above, and further in view of Chuang et al. (U.S. 7211702) [hereinafter Chuang] and Camson.

Hartog and DeBruin disclose the device as stated above.

They do not explicitly teach the limitations of claims 11-16.

Chuang discloses a device wherein a reactor vessel is a part of a distillation column/ system (having stages) and the temperature and pressure of the vessel is controlled by valves and automatic controllers. Chuang controls the process parameters to keep them within acceptable range. The device is concerned with separating of the components.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device of Hartog and DeBruin in a distillation system of Chuang because the parameters of the system of Chuang are also needed to be measured and controlled, as already suggested by Chuang.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a

vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by the Prior Art to a different position depending what process is being performed in the distillation system, since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Claims 24, 26-31 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog in view in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Gamson (U.S. 3440865).

Hartog discloses the device as stated above.

Hartog does not explicitly teach the limitations of claims 24, 26-31.

Anderson teaches that a fiberoptic sensor for sensing pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog in the distillation vessel, because it is known in the art and admitted by Anderson that the fiber optical temperature/ pressure sensor could be used in the distillation vessel in order to determine/ control its temperature and pressure along the vessel.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the

particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed by Gamson to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog in the distillation vessel, as taught by Anderson and Gamson, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Gamson.

Claims 9, 12-15 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Hartog and DeBruin, as applied to claim 1-7, 10 above, and further in view in view of Anderson et al. (U.S. 4703174) [hereinafter Anderson] and Gamson (U.S. 3440865).

Hartog and DeBruin disclose the device as stated above.

They do not explicitly teach the limitations of claims 9, 12-15.

Anderson teaches that a fiberoptic sensor for sensing pressure and temperature could be used along with a distillation vessel.

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog and DeBruin in the distillation vessel, because it is known in the art and admitted by Anderson that the fiber optical temperature/ pressure sensor could be used in the distillation vessel in order to determine/ control its temperature and pressure along the vessel.

With respect to the particular distillation vessel, i.e., having inlet, etc., and also separating liquid components: Although Anderson does not explicitly describe the particular features of the distillation vessel, Gamson, who describes a conventional distillation vessel states that it has a liquid inlet, a vapor outlet, and a process comprising a vapor/ liquid separation stage, known in the standard practice, and inherently, directed to separating liquid components and controlling parameter, and having a plurality of valves. Gamson describes a normal (known in the art) vaporization process in a distillation unit/ vessel, the vessel having a temperature sensor having a vapor outlet and a liquid inlet (with valve), wherein the vapor is removed by the process by means of the outlet and valve 44 to discharge an access of the vapor. Gamson teaches that the distillation process normally comprising a vapor/liquid separation phase. Please note, the particular positioning of the inlet/ outlet, is absent any criticality because it was held that there would be no invention in shifting the inlet/ outlet disclosed

by Gamson to a different position since the operation of the device would not thereby be modified. See In re Japikse, 86 USPQ 70 (CCPA 1950).

Therefore, it would have been obvious to one of ordinary skill in the art to use the device disclosed by Hartog and DeBruin in the distillation vessel, as taught by Anderson and Gamson, because this kind of distillation vessel is known to be a conventional distillation vessel, as already suggested by Gamson.

Response to Arguments

Applicant's arguments with respect to claims 1-7, 8-16 have been considered but are moot in view of the new ground(s) of rejection necessitated by the amendment. Applicant's arguments with respect to claims 18, 20-31 are not persuasive.

Applicant states that Hartog does not teach that the fiber optic monitors temperature within the body. This argument is not persuasive because Hartog states that the optical fiber monitors wall temperature of the vessel along some point of the optical fiber. This would imply that the temperature of inside of the vessel is monitored, because potential hot spots on the wall are resulting from the vessel overheating (col. 1, lines 35-38).

Applicant states that Hartog does not teach an automatic control based on the temperature profile. However, the Examiner's position that turning on cooling air when the wall (body) is hot in order to limit its temperature (change parameter) which is inherently done automatically, satisfies the Applicant's claimed invention.

Applicant states that Hartog does not teach a "fiber positioned in the conduit". This argument is not persuasive, because, the Examiner's interpretation of Hartog, the conduit is a structure/ metal 24, and the fiber is positioned within this structure.

With respect to Hartog in view of Anderson: Applicant states that the fiber of Anderson would not be appropriate for use with a distillation vessel. This argument is not persuasive because, in the rejection on the merits, the examiner used Anderson only for its teaching that the temperature of the distillation vessel could be used by means of an optical fiber. Therefore, the combination of Hartog and Anderson teaches to use the fiber of Hartog with a distillation vessel whose temperature also needed to be measured.

With respect to Hartog in view of Chuang: applicant states that Chuang does not teach a control. This argument is not persuasive because, in the rejection on the merits, the examiner used Chuang only for its teaching that the temperature, pressure and parameters and control valves, while Hartog (primary reference) combined with Chuang teaches the rest of the limitations.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571/ 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gail Verbitsky
Primary Patent Examiner, TC 2800

June 30, 2009

/Gail Verbitsky/
Primary Examiner, Art Unit 2855